

### **REMARKS/ARGUMENTS**

The rejections presented in the Office Action dated May 18, 2007 (hereinafter Office Action) have been considered. Claims 1-17, 19-40, 43 and 44 remain pending in the application. Reconsideration of the pending claims and allowance of the application in view of the present response is respectfully requested.

Dependent claim 28 (withdrawn) has been amended to recite “controller” rather than “pulse generator” for consistency with independent claim 21. This was not made to overcome any prior art rejections and does not narrow the claim scope.

Claims 1, 2, 5-8, 11, 13, 17, 21, 24-27, 30, 36, 38-40 and 43 based on 35 U.S.C. §102(e) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 5,653,738 to Sholder (hereinafter “Sholder”). Claims 12, 19, 31 and 32 are rejected under 35 U.S.C. §103(a) as being unpatentable over Sholder.

Applicant respectfully disagrees with the Examiner’s characterization of Sholder and the contention that Sholder anticipates the rejected claims or renders the rejected claims obvious. Applicant respectfully asserts that Sholder does not anticipate the rejected claims because various features recited in the rejected claims are not disclosed in Sholder. The rejected claims are not rendered obvious by Sholder because the asserted combination fails to teach or suggest all of the claim elements and there would be no motivation to combine or modify the reference in the manner suggested by the Examiner. The modification suggested by the Examiner would work at cross purposes with the claimed invention, making the invention unfit for its intended purpose.

Independent claims 1, 21, and 36 involve a method of AV synchronous pacing of the heart that includes a post ventricular atrial refractory period (PVARP). The pacing therapy is delivered to the ventricles according to a pacing timing sequence. An event that disrupts ventricular pacing is detected, whereupon the pacing timing sequence is modified to restore ventricular pacing. Pacemaker mediated tachycardia is avoided while the ventricles are paced using the modified pacing timing sequence.

Sholder describes a process that alters DDI operation to terminate a pacemaker mediated retrograde rhythm (PMRR). (See Sholder, abstract). The technique described by

Sholder to terminate PMRR does not involve a modified pacing sequence to restore ventricular pacing following a disruption as recited in Applicant's claims. Sholder describes lengthening PVARP after detection of PMRR. (See Sholder, Figures 6-8 and Figure 9, element 200). The pacing timing sequence described by Sholder works to further disrupt ventricular pacing rather than mitigate or reduce the disruption of ventricular pacing. By lengthening PVARP during AV synchronous pacing as described by Sholder, "the occurrence of any P-wave, such as the retrograde P-wave 171, that occurs during the extended portion of the PVARP . . . . is blocked." (See Sholder, col. 15, lines 45-55, emphasis added). A P-wave blocked by an extended PVARP during AV synchronous pacing would further disrupt ventricular pacing because a blocked non-retrograde P-wave would not initiate an AV delay culminating in delivery of a ventricular pace. Sholder's intent is block P-waves which might be retrograde as a way of terminating the pacemaker mediated tachyarrhythmia, however this technique also sweeps in any non-retrograde P-waves occurring in the extended PVARP. The pacing timing sequence for PMRR termination described by Sholder exacerbates any disruption of ventricular pacing rather than mitigating the disruption of ventricular pacing as recited in Applicant's claims.

Sholder does not teach or suggest the use of a pacing timing sequence that mitigates the disruption of ventricular pacing. For at least these reasons, Applicant's independent claims 1, 21, and 36 and all claims dependent thereon are not anticipated by Sholder under 35 U.S.C. §102(e).

The above-referenced claims have also been rejected under 35 U.S.C. §103(a) as being obvious in view of Sholder. The Office Action asserts that Sholder teaches all of the elements of the rejected claims "except for the pacing therapy being delivered to the left and right ventricles and avoiding PMT," and that it would have been obvious to one of skill in the art to modify to the teachings of Sholder to include these elements.

In addition the elements not taught by Sholder as indicated by the Examiner, Sholder does not teach or suggest additional elements of Applicant's independent claims 1, 21, and 26. As discussed in more detail above, Sholder does not teach or suggest a modified pacing sequence that restores ventricular pacing following a disruption of ventricular pacing.

Sholder's technique for terminating PMRR increases PVARP which would disrupt ventricular pacing. Independent claims 1, 21, and 36 are not obvious in view of Sholder because all of the elements of the claims are not taught or suggested by the references or known in the art.

Furthermore, because the suggested modification would work against providing a modified pacing therapy that mitigates the disruption of ventricular pacing, the suggested modification would render the invention, as recited in claims 1, 21, and 36, for example, unfit for its intended purpose. For at least these reasons, the case for prima facie obviousness fails. Therefore, independent claims 1, 21, and 36 and all claims dependent thereon are not obvious in view of Sholder.

Claims 1, 2, 5-8, 11-13, 17, 19, 21, 24-27, 30-33, 36, 38-40 and 43 are rejected under 35 U.S.C. §102(e) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 5,893,882 to Peterson et al. (hereinafter "Peterson").

Peterson describes a technique for a mode switching operation that is used during periods of atrial fibrillation for providing ventricular rate stabilization. Peterson's technique describes mode switching from an atrial synchronous operation to a non-atrial synchronous operation and regularizes the ventricular rhythm during periods of atrial fibrillation. Peterson does not describe a modified pacing sequence that restores ventricular pacing after the disruption of ventricular pacing as recited in Applicant's independent claims 1, 21, and 36. Restoring atrial synchronous ventricular pacing would be inappropriate during periods of atrial fibrillation because the atria are beating at a high rate. Peterson does not teach the element of a modified pacing sequence that restores ventricular pacing following a disruption which is included in Applicant's claims 1, 21, and 36.

Peterson does not describe each element of Applicant's independent claims 1, 26, and 44. Therefore, independent claims 1, 21, and 36, and all claims dependent therefrom are not anticipated by Peterson.

The above-referenced claims have also been rejected under 35 U.S.C. §103(a) as being obvious in view of Peterson. The Office Action asserts that Peterson teaches all of

the elements of the rejected claims “except for the pacing therapy being delivered to the left and right ventricles and avoiding PMT,” and that it would have been obvious to one of skill in the art to modify to the teachings of Peterson to include these elements.

In addition the elements not taught by Peterson as indicated by the Examiner, Peterson does not teach or suggest additional elements of Applicant’s independent claims 1, 21, and 36. As discussed in more detail above, Peterson does not teach or suggest a modified pacing sequence that restores ventricular pacing following a disruption of ventricular pacing. Peterson’s technique for regularizing the ventricular rhythm during periods of atrial fibrillation is non-atrial synchronous and also does not restore ventricular pacing. Independent claims 1, 21, and 36 are not obvious in view of Peterson because all of the elements of the claims are not taught or suggested by the references or known in the art.

In addition, one skilled in the art would not be motivated to combine the teachings of Peterson with techniques known in the art to arrive at Applicant’s invention. Atrial synchronous ventricular pacing must be disrupted during atrial fibrillation because the atria are beating at a high rate. Restoring ventricular pacing, which is an element of Applicant’s independent claims, would lead to consistent ventricular pacing synchronized with the atrial beats. Consistent ventricular pacing during periods of atrial fibrillation would be fatal to the patient because the high atrial rate. The case for prima facie obviousness fails because the suggested modification would be fatal to the patient and would render the invention of claims 1, 19, and 34 unfit for its intended purpose. Therefore, independent claims 1, 21, and 36 and all claims dependent thereon are not obvious in view of Peterson.

Claims 1, 2, 5-8, 11-13, 17, 19, 21, 24-27, 30-32, 36, 38-40 and 43 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3, 5, 14, 16, 17, 19, 22, 23, 28, 29 and 34 of copending application no. 10/794,323 and over claims 1, 2, 6-10, 15-19, 23-27, 31-34, 38-45, 47-49, 53 and 54 of copending application 10/794,151. Applicant respectfully asserts that, in view of the arguments made above, the Examiner is compelled to withdraw the substantive art rejections of the claims. Once withdrawn, the only rejection remaining in the subject application is the provisional obviousness-type double patenting rejection. In view of

MPEP § 804 I(B), Applicant respectfully requests that the provisional obviousness-type double patenting rejection be withdrawn and that the subject application be permitted to issue as a patent.


Applicant respectfully submits that all claims are in condition for allowance and requests withdrawal of the restriction requirement as applied to the withdrawn claims and rejoinder of the withdrawn claims in the application in accordance with MPEP §824.04.

Authorization is given to charge Deposit Account No. 50-3581 (GUID.150DIV4) any necessary fees for this filing. If the Examiner believes it necessary or helpful, the Examiner is invited to contact the undersigned attorney to discuss any issues related to this case.

Respectfully submitted,

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